

ABSTRACT

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Graphics Processing Units (GPU) and the Goddard Earth Observing System atmospheric model (GEOS-5):
implementation and potential applications

Earth system models like the Goddard Earth Observing System model (GEOS-5) have been pushing the limits of large clusters of multi-core microprocessors, producing breath-taking fidelity in resolving cloud systems at a global scale. GPU computing presents an opportunity for improving the efficiency of these leading edge models. A GPU implementation of GEOS-5 will facilitate the use of cloud-system resolving resolutions in data assimilation and weather prediction, at resolutions near 3.5 km, improving our ability to extract detailed information from high-resolution satellite observations and ultimately produce better weather and climate predictions.